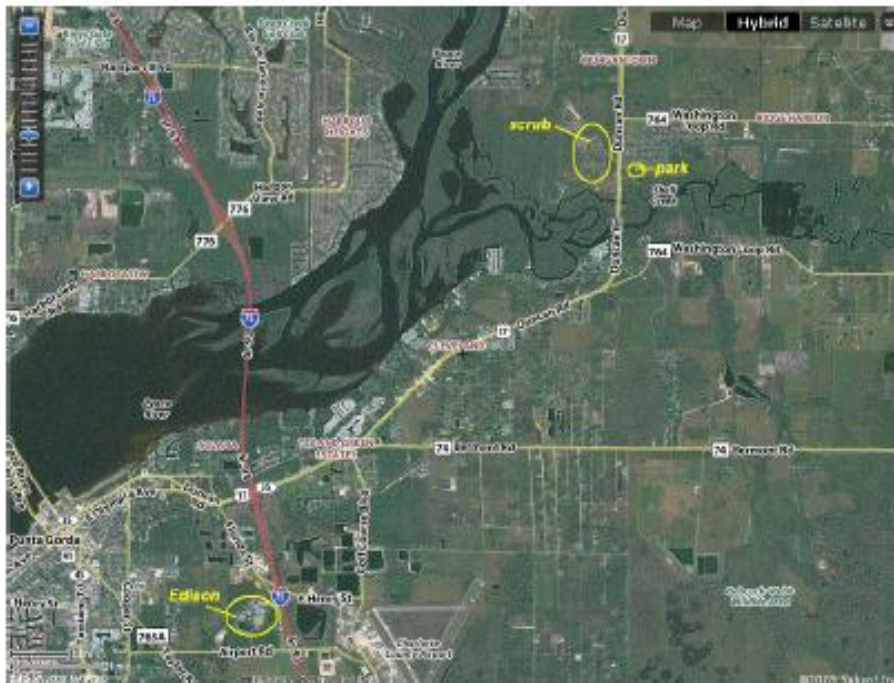


Equipment: soil borer, camera, zip-lock bags, first aid kit, posthole digger, increment corer,

### 1. DIRECTIONS TO PRAIRIE CREEK SCRUB



North on US-17, several miles past Hwy 74 intersection, you cross Shell Creek, then take second paved road to the right (Balsam Blvd) and park in the grass.



- 4 mya, falling seas expose sea floor...i.e. land bridge, Asia-Alaska, animals  
 some ups and down in temp and sea level, but trend is down  
 some monkeys in Africa move out of the trees, run on hind legs,  
 1 mya, dozens of hominid...evolutionary experiments  
 0.5 mya, several hominids use very primitive tools, some walk upright,
- 0.15 mya (150,000 yrs. ago) coldest point...  
 land bridge maybe covered by ice..parts open...then close  
 Scotland under ice 2 miles thick  
 sea level 400 feet lower than today  
 0.1 mya (100,000 yrs. ago), better tools, some hominids migrate out of Africa
- 0.125 mya (125,000 yrs. ago) major warming,  
 0.075 (75,000 yrs. ago) a much larger series of human migrations out of Africa  
 land bridge & Fla. covered by seas, except Central Ridge islands  
 sea levels 300 feet higher than today  
 some spots show temp jumps 20 degrees C in 10 years
- 0.12 mya (**120,000-20,000 yrs. ago**) **major cooling, sea level falls**  
 scrub becomes continuous from Florida to the Rockies and into Mexico  
 Prairie Ck. Ridge exposed at this time  
 Shell and Prairie Creeks cut deep
- 0.015 mya (15,000 yrs. ago) humans cross land bridge from Asia to Alaska  
 sea levels start to rise
- 0.013 mya (13,000 yrs ago) humans reach Florida..  
 most human evidence likely under 150-200 feet out in Gulf  
 a few remains found 100 miles inland in North Port, Warm Mineral Springs, etc.  
 sea level continues to rise  
 continuous scrub begins to give way to warmer and wetter ecosystems  
 however, on fossil sand dunes *islands* of ancient scrub persist
- 0.010 mya (10,000 yrs. ago) temperatures stabilize  
 human have enough temp. stability to form agriculture and civilizations  
 in Florida, saber tooth cats, mammoths, giant sloth's and camels  
 sea level has remained roughly where it is..last 10000 yrs

### Species we might see

#### Angiosperms (flowering plants)

- Gaura            *Gaura angustifolia* (fire-cracker weed)
- Prickly pear cactus    *Opuntia compressa* "cochineal scale insects"
- Palmetto            *Serenoa repens*        fruits shrink prostrate glands in men
- Grape                *Vitis rotundifolia*
- Blackroot            *Pterocaulon pycnostachyum*
- Milk pea             *Galactia elliotii*
- Turkey oak          *Quercus laevis*
- Myrtle oak          *Quercus myrtifolia*
- Sand live oak        *Quercus geminata* (Below ground biomass, clonal, sprout from root after fire)
- Tar flower          *Befaria racemosa*
- Wiregrass            *Aristida stricta*
- Broomsedge         *Andropogon virginicus* a.k.a. chalky bluestem
- Blueberry            *Vaccinium myrsinites*
- Fetter bush         *Lyonia lucida*
- Partridge pea        *Chamaecrista fasciculata*, a.k.a. *Cassia fasciculata*
- Pennyroyal          *Piloblephis rigida* a.k.a. scrub peppermint (natural pesticide)

Angiosperm "Epiphytes" (*epi* = on, *phyte* = plant: a plant growing on another plant)

Spanish moss *Tilandsia usenoides*

Wild Pine *Tilandsia setacea*

Ball Moss *Tilandsia recurvata*

Quill-Leaf *Tilandsia fasciculata*

Scrub Pawpaws *Asimina obovata*

Gopher Apple *Lycania michauxii*

Silk Bay *Persea humilis*

### **Gymnosperms** (cone bearing: pines, spruce, fir, etc.)

Long leaf pine *Pinus palustris* (large cones, dry, well drained soil)

Slash pine *Pinus elliottii* (medium cones, moist, poorly drained soil)

Sand pine *Pinus clausa* (small serotinous cones, require very dry, well drained soil, fire & even-aged stands, root traps and below ground biomass)

### **Cycads** (primitive ancestors to the gymnosperms)

Coonti *Zamia floridana*

### **Lichens** (symbiotic fungi & lichen, may secrete chemical that keeps plants from invading)

Match stick or British Soldier lichen *Cladonia leporina*

Reindeer lichen *Cladonia evansii*

Silvery lichen *Cladonia prostrata*

### **Insects**

Harvester ants

Insect galls

Pigmy mole cricket *Ellipes minuta*

Millipedes (copography)

Spiders (scrub spiders do not use "ballooning" to move about)

Grasshoppers, crickets, dragonflies

### **Mammals**

Cottontail Rabbit *Sylvilagus floridanus*

Opossum *Didelphis virginiana*  
Short-tailed shrew *Blarina carolinensis*  
Eastern mole *Scalopus aquaticus*  
Florida mouse *Podomys floridanus*  
Coyote *Canis latrans*  
Grey fox *Urocyon cinereoargenteus*  
Black bear *Ursus americanus*  
Raccoon *Procyon lotor*  
Bobcat *Lynx rufus*  
Feral pig *Sus scrofa*  
Evening bat *Nycticeius humeralis*

### **Birds**

Scrub jay  
Rufus-sided towhee  
Brown thrasher  
Woodpeckers  
Red-bellied  
Red-cockaded  
Downy  
Pileated  
Flicker  
Red-headed  
Chuck-will's-widow  
Great horned owl  
Barred owl  
Screech-owl  
Red-shouldered hawk  
Swallow-tailed kite  
Black vulture  
Turkey vulture

### **Herps (snakes, lizards, amphibians)**

Ground skink *Scincella lateralis*

Eastern diamondback rattlesnake *Crotalus adamanteus*

Pygmy rattlesnake *Sistrurus miliarius*

Indigo snake *Drymarchon corais*

Gopher tortoise *Gopherus polyphemus* ("keystone species")

### Ecological features

Sandy ridge (fossil sand dune)

Yellow sand, Litter, pH bleaching

Burn line

Harty cup

Fire dynamics

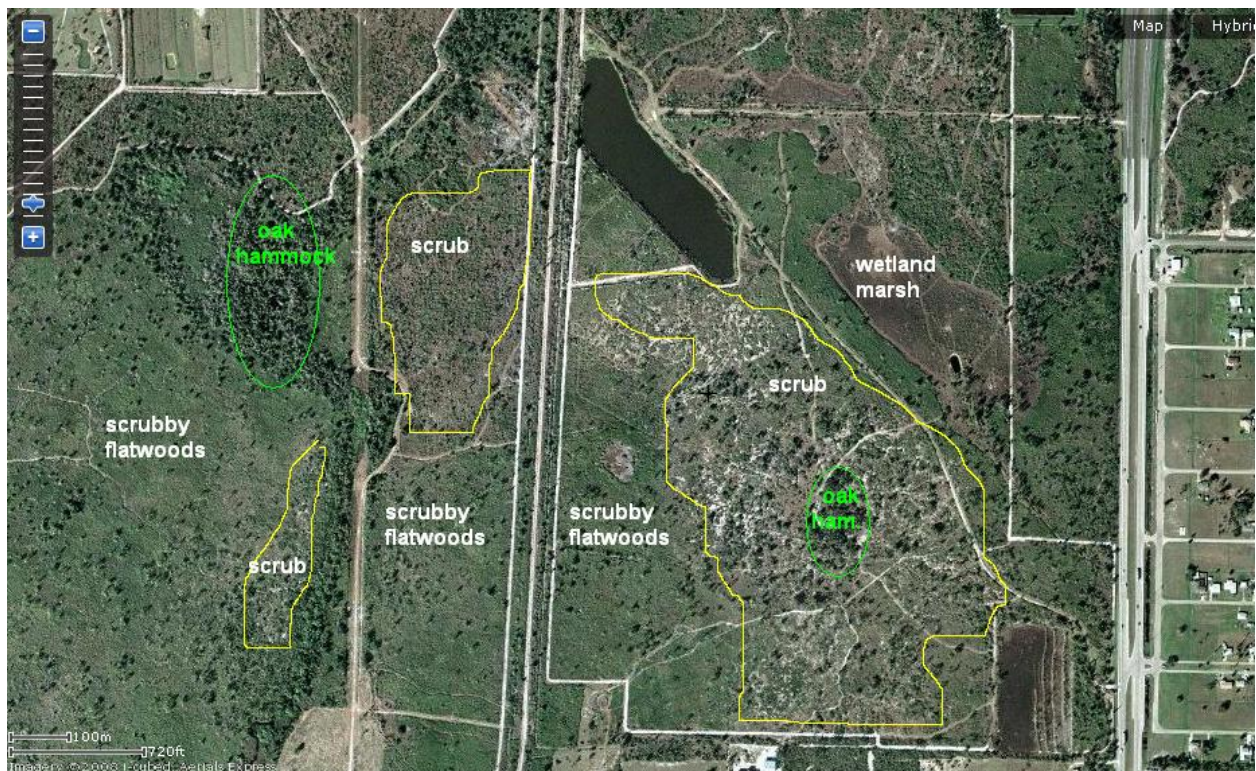
Below ground biomass

Scrub characteristics: short, stiff, rough, rolled or hairy leaves. It's all about the dryness.

Scrub expands and contracts, down and up slope to tops of sandy hills as sea levels rise/fall

Low amounts of litter

Scrub grades into dry (xeric) pine palmetto flatwoods, oak hammocks and wetlands in a mosaic of habitats.



## **Ecosystem level report topics (14):**

Plant adaptations to dry, scrub environment?

Animal adaptations to dry, scrub environment?

Geologic origin of Central Ridge and scrub hills along coast?

Why are scrub ecosystems so dependent on soil/root *Microrizza*?

Ballooning is a common behavior that spiders use to move about. In what was this behavior the genesis of Batman and Spiderman? Why have scrub spiders lost this behavior?

Why is there so little litter build up in the soil of scrub ecosystems? What does this mean about the scrub's ability to "carry a fire." What "fire return interval" are scrubs adapted to?

Describe the phosphorus cycle in ecosystems, and speculate on the role that burrowing creatures like the gopher tortoise and harvester ants play in this cycle?

During what months do most natural lightning fires get started in Florida ecosystems and why? Describe with a graph the monthly rainfall pattern in Florida.

What main made features serve as natural fire breaks and restrict natural lightning fires, and what effect does reducing fire frequency have on scrub ecosystems?

What is the depth to ground water in the scrub ecosystem and how does this benefit burrowing animals and plants with tap roots? Also, explain the "capillary water" that plant roots require.

Explain the hydrologic cycle and what causes oceans to rise and fall as climate cycles from hot to cold, to hot, to cold in a continuous cycle. And describe the geographic response of scrubs to periods of warming. To periods of cooling.

There is very little evidence of herbivory looking at the leave of scrub plants. How does most of the energy of the plant *producers* find its way into the *consumers*, and arrange some of the species we saw in a food chain.

Why is the gopher tortoise considered a *corner stone* species in the scrub? Present a list of the animals that use the gopher burrows.

Describe how pant energy flows through the detritus (dead and rotting biomass) food chain into the ecosystem and through the grazing (eating live non rotted biomass). Since there is so little detritus in the scrub, which food chain or food web dominates in the scrub?